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First breeding record of Slaty Bunting *Emberiza siemsseni*

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The Slaty Bunting *Emberiza siemsseni* is a range-restricted Chinese endemic, breeding in the highlands of south Gansu province, south Shaanxi province and west and north-east Sichuan province (Zheng 2011). Although not rare and designated as Least Concern by BirdLife International (2015), very little is known about its breeding ecology (Madge 2015). Here, we describe for the first time the Slaty Bunting's eggs, nest, nest-site and breeding behaviour.

On 3 July 2014 we found a Slaty Bunting nest in Lianhuashan Nature Reserve, Kangle county, Gansu province (34.952°N 103.768°E). The nest was located 0.3 m from a small path in shrub-land and was positioned 0.4 m above the ground on a 0.7 m tall spruce sapling. About 50% of the nest site area (defined as a 5 m radius around the nest) was covered by shrubs, dominated by willows *Salix* sp., with an average height of 3.5 m.

When found, the nest contained four eggs. No further eggs were laid, hence incubation was already underway. The eggs were oval in shape and creamy white in colour, with irregular markings slightly concentrated at the large end (Plate 1). We weighed the eggs to the nearest 0.01 g, using a portable digital balance, and measured the length and breadth to the nearest 0.01 mm, using digital vernier calipers. Mean egg size was 17.93 ± 0.38 mm × 14.10 ± 0.11 mm, with a mean weight of 1.89 ± 0.07 g.

The outer layer of the circular, cup-shaped nest was made mainly of broad leaves and grass-stems, with a lining of soft, thin grass-stems and livestock hairs. The inner diameter of the nest was 57.7 mm and the outer diameter 84.4 mm, with an inner depth of 44.7 mm and total height of 65.5 mm.

We placed an infrared-triggered camera near the nest to monitor parental activities. However, because of rainy weather and the limitations of the camera, we obtained detailed incubation data only on 10 July. From 06h00 to 18h00 we observed 12 change-overs, and both sexes spent similar times incubating: 349 minutes (male) and 352 minutes (female). Three eggs hatched on 13 July, when the first images were captured of the adults feeding the nestlings, giving an incubation period of at least 10 days. One egg failed to hatch, and it was examined after the nestlings had left the nest: the yoke was still complete and no embryo development was evident, so we deduced that the egg was unfertilised.

Both sexes reared the nestlings, but detailed provisioning rates could not be obtained because of the two-minute intervals between consecutive triggered events on the camera. We watched 10 feeding sessions and observed that the parents mainly fed insects and insect larvae to their nestlings, with some spiders and other small arthropods. Ten days after hatching, the plumage of the nestlings resembled that of the female in colour and appearance (Plate 2). The young birds remained in the same vicinity at least until 29 July because the adults were observed carrying food near the nest site every day.

Recent phylogenetic analyses indicate that the Slaty Bunting is a sister species to Yellow-throated Bunting E. elegans (Alström *et al.* 2008). Compared with the Yellow-throated Bunting (Chen *et al.* 2015), our results suggest that the Slaty Bunting has smaller eggs and males may take a greater part in incubation. However, as we only observed one nest of the Slaty Bunting, we must be cautious in any general statement regarding its breeding biology.

Although Slaty Bunting is not a threatened species, its breeding range is relatively narrow; the Lianhuashan Nature Reserve is about 150 km north of the previously known breeding range of

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Plate 1. Nest and eggs of the Slaty Bunting *Emberiza siemsseni*, Lianhuashan Nature Reserve, Kangle county, Gansu province, China, 3 July 2014.

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Plate 2. Slaty Bunting nestlings at 10 days old, Lianhuashan Nature Reserve, 22 July 2014.

the species. By checking the bird species list of the reserve (Sun *et al*. 2008) and many birdwatching notes, we confirmed that it was a new record for Lianhuashan. Between late April and early June 2014, we trapped four male Slaty Buntings; only one male was seen in 2015, on 15 April; in 2016 we trapped one male, on 19 May. We tried to locate more birds by using song playback and mist-nesting, but none were found in either the 2015 or 2016 breeding seasons. These records suggest that the Slaty Bunting may have extended its breeding range to the north in recent years, although more field evidence is needed to verify this. We hope that our findings will stimulate other ornithologists to search for nests and collect more information about the species's breeding biology in its normal breeding range.

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Further evidence that wasps prey on nestlings

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Social wasps of the family Vespidae forage for water, pulp, carbohydrates and animal protein. When hunting, they are opportunistic generalists and use a variety of mechanisms to locate and choose prey which they consume directly (Edwards 1980, Richter 2000). There are complicated ecological associations between wasps and birds (Almeida & Anjos-Silva 2015), such as competition for food (Beggs 2001). However, increasing evidence shows that birds are one of the important predators of wasps (Windsor 1976, Henriques & Palma 1998, Almeida & Anjos-Silva 2015), but wasps are also thought to kill nestlings (Moller 1990). Here, we summarise a striking example of wasp–bird interactions.

During the 2015 breeding season, we studied the feeding habits of Red-billed Leiothrix *Leiothrix lutea* at the Laojunshan National Nature Reserve, Sichuan province, south-west China (28.660–28.727°N 103.960–104.070°E). The reserve lies between 900 and 2,000 m. The climate is temperate (annual average temperature 12.0–14.7°C) with high precipitation (more than 1,500 mm per year) and the characteristic vegetation is evergreen broadleaf forest (Fu *et al*. 2011). Social wasps are common in the lower parts of the reserve.

On the afternoon of 11 August 2015, we recorded the predation of Red-billed Leiothrix nestlings in nest 30-2015, by social wasps. The four nestlings were about three days old and the main sequence of events was recorded using a Canon SX50 HS digital camera as detailed here. At 16h26:31 an adult leiothrix arrived and cleaned the nest. The nestlings were active at the time; the adult left at 16h27:04. Then at 16h32:58, a single wasp arrived, entered the nest and killed the four nestlings; it left at 16h39:05, carrying nestling flesh (Plate 1). At 16h50:21 an adult leiothrix arrived with insects to feed the